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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/535,629

03/24/2000

Jeffrey W. Scott,

37398/SAH/C715

2082

3017

7590

04/23/2003

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EXAMINER

NGUYEN, TUAN M

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/535,629

Applicant(s)

SCOTT, JEFFREY W.

Examiner

Tuan M Nguyen

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 February 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 45-72 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 45-72 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

  
**PAUL IP**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Drawings*

1. Figures should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
2. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 45-50 are rejected under 35 U.S.C. 102(b) as being anticipated by Gilliland et al ('582).

With respect to claim 45, Gilliland et al disclose an optoelectronic device assembly (14), optoelectronic device (20) comprising a substrate (26), an optical transparent encapsulation medium matching layer overlying said optoelectronic device, said medium matching layer having an index of refraction  $n_1$  substantially equal to an index of refraction  $n_2$  of an encapsulation medium (66) which is to encapsulate said optoelectronic device, and said medium matching layer having a predetermined thickness configured to adjust an optical characteristic of said optoelectronic device so as to make pre-encapsulation on- wafer , test characteristic of said

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optoelectronic device substantially similar to post encapsulation functional characteristics, note col. 4 line 24 to col. 7 line 65, see figs. 1-2.

With respect to claims 46-47, Gilliland et al disclose optoelectronic device (20) comprises a VCSEL (10) and the thickness of said medium matching layer (66) comprising a non-quarter wavelength thickness, note col. 4-7, see figs 1-2.

With respect to claims 48-50, Gilliland et al disclose an encapsulated optoelectronic device assembly (14), optoelectronic device (20) comprising a substrate (26), an optically transmissive housing substantially encapsulating said optoelectronic device (20) includes VCSEL (10) wherein said housing (12) has an index of refraction  $n_1$ , an optically transparent window (66) encapsulation medium matching layer overlying said optoelectronic device (20), medium matching layer comprises a non-quarter wavelength thickness, said medium matching layer having an index of refraction  $n_1$  substantially equal to said index refraction  $n_2$  of said housing, said medium matching layer having a predetermined thickness configured to adjust an optical characteristic of said optoelectronic device so as to make pre-encapsulation on wafer, test characteristics of said optoelectronic device substantially similar to post encapsulation functional characteristics, note col. 4 line 23 to col. 10 line 6, see figs. 1-2.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 51-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gilliland et al ('582) in view of Kopf et al ('441).

With respect to claims 51 and 59, disclose all limitations as set forth in the claims 45 and 48 except for a VCSEL structure comprising a first mirror overlying said substrate, an active optical region overlying said first mirror, and a second mirror overlying said active optical region. Whereas Kopf et al discloses a VCSEL (10) comprising a substrate (12) a first mirror (13) overlying said substrate (12), and an active region (15) overlying said first mirror and a second mirror (17) overlying said active region (15), note cols. 3-4, see fig. 1. For the advantageous of VCSEL system, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Gilliland et al with a VCSEL structure comprising a first mirror overlying said substrate, an active optical region overlying said first mirror, and a second mirror overlying said active optical region as taught or suggested by Kopf et al.

With respect to claims 52 and 60, Gilliland et al disclose said thickness of said medium matching layer comprising a non-quarter wavelength thickness, note col. 4-7, see figs 1-2.

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With respect to claims 53-58 and 61-66, Kopf et al shows in figure 1 a VCSEL comprising an optical transparent tuning layer, said tuning layer being configured to predictably change a top facet reflectivity of said second mirror and having a predetermined thickness configured to adjust a slope of the laser emission to within a desired range, and the tuning layer is one of plurality of layers of a distributed Bragg reflector, note col. 2 line 11 to col. 6 line 67.

7. Claims 67-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gilliland et al ('582) in view of Kopf et al ('441) further in view of Yuang et al (864).

With respect to claim 67-72, Gilliland et al and Kopf et al disclose all limitation above except for a method of fabricating an encapsulated VCSEL having a controlled slope efficiency, the method comprising the step of fabricating a VCSEL structure, measuring a slope efficiency of said VCSEL structure. Whereas Yuang et al disclose the method of fabricating an encapsulated VCSEL having a controlled slope efficiency including measuring a slope efficiency of said VCSEL, note col. 1 line 35 to col. line 62, see figures 1-4. For the advantageous of VCSEL system, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Gilliland et al and Kopf et al with a VCSEL structure and method of measuring a slope efficiency of said VCSEL structure as taught or suggested by Yuang et al.

#### **Citation Of The Pertinent References**

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The patent to Althaus et al (US patent 6,422,766) discloses housing configuration for a laser.

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The patent to Jaffe et al (US patent 5,955,839) discloses incandescent microcavity light source having filament spaced from reflector at node of wave emitted.

The patent to Brazas, Jr. (US patent 5,710,753) discloses multi-element grating beam splitter using double refraction to reduce optical feedback and associated light source noise.

The patent to Doggett (US patent 5,615,052) discloses laser diode/lens assembly.

The patent to Bausman, Jr. (US patent 5,262,675) discloses laser diode package.

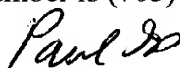
The patent to Dixon (US patent 4,847,851) discloses butt-coupled single transverse mode diode pumped laser.

### ***Communication Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan M Nguyen whose telephone number is (703) 306-0247. The examiner can normally be reached on 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3329.



Paul Ip  
SPE  
Art unit 2828

TMN  
April 19, 2003